

Remarks:

Claim 41-88 remain for consideration in this application. Claims 41, 45-46, 53, 54, 61-62, 71, and 79-80 have been amended. Claims 1-40 have been withdrawn as being directed to a non-elected invention. The election to prosecute claims 41-88 was made without traverse. The Applicants reserve the right to file a divisional application to the non-elected group.

Turning now to the office action, the Examiner objected to Figures 3, 4, and 6, asserting that they are not legible. The Applicants have enlarged these figures and are resubmitting these enlarged figures with this Amendment. These new drawing sheets have been labeled as "Replacement Sheet" in the top margin of each sheet. It is believed that this objection has now been overcome.

The Examiner also objected to the title of the invention for failing to clearly indicate the use of silsesquioxanes. The title has been amended to "THERMALLY CURABLE MIDDLE LAYER COMPRISING POLYHEDRAL OLIGOMERIC SILSESQUOXANES FOR 193-NM TRILAYER RESIST PROCESS. It is believed that this objection should be withdrawn with this amendment.

Claims 46-47, 54, 56, 62, and 80 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. With respect to claims 46-47, 62, and 80, the Examiner noted that R^2 in the polymer backbone must be divalent. As a result, the claims have been amended to change R^2 to R^5 in the polymer backbone and recite that R^5 is selected from the group consisting of alkyls and aryls. This same change has been made to the specification in two sections as well. This amendment is supported by the specification as filed as the Applicants have simply eliminated one member of a Markush groups. It is believed that this rejection should be overcome.

With respect to the § 112 rejection against claims 54 and 56, the Applicants have replaced the word "intermediate" in claim 54 with the word "between" as they have the same meaning. Claim 56 depends from claim 54, so this change necessarily becomes a limitation of claim 56.

In the second paragraph on page 5 of the office action, the Examiner stated that claims 45-47 do not require the presence of the recited polymer. As a result, the Applicants have amended claims 45, 61, and 79 to require that the constituent be a polymer. Thus, the Examiner should now give weight to the limitations regarding the alcohol functionality and the structure of the monomer.

Turning now to the prior art rejections, the Examiner has rejected each of independent claims 41, 53, and 71 as being anticipated by either U.S. Patent No. 6,420,084 to Angelopoulos or U.S. Patent No. 5,484,867 to Lichtenhan et al. The inventive composition of the present application is different from the compositions of the '084 and '867 references in that the inventive composition is directed towards a thermosetting composition. To call out this feature, independent claims 41, 53, and 71 (the only remaining independent claims) have been amended to recite that the composition or layer has the property of exhibiting less than about 5% stripping when subjected to a stripping test. This test is defined on page 8, lines 9-27 of the application as filed. Such a stripping test result means the composition can be formed into a cured layer that is substantially insoluble in a photoresist solvents.

Neither the '084 nor the '867 patent teach or suggest this limitation. The '084 patent is concerned with a photoresist composition. The '084 compositions do not contain a crosslinker, and they are not thermosetting compositions. Thus, they are not substantially insoluble in a photoresist solvent but rather are highly soluble in a photoresist solvent as all photoresists would be.

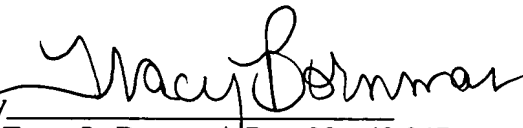
Furthermore, there is no teaching or suggestion of modifying the '084 photoresist composition into one that would be insoluble in photoresist solvents, and one of ordinary skill in the art would not find this modification to be obvious. In fact, one of ordinary skill in the art would not modify the photoresist compositions in this way as photoresists must be soluble in photoresist solvents, or they could not be patterned. It is respectfully submitted that all rejections predicated upon the '084 patent should be withdrawn.

The rejections predicated upon the '867 patent should be withdrawn for essentially the same reasons. That is, the '867 patent does not teach the formation of a composition that has the property of exhibiting less than about 5% stripping when subjected to the stripping test defined in the specification. The Examiner has pointed to the text at the bottom of column 3 and in Example 1 of the '867 patent to allege the inferred teaching of a crosslinking agent. However, the Applicants respectfully disagree with this assertion. The sections cited by the Examiner are concerned with reactions that form block co-polymers of the silsesquioxane with another monomer. This is a polymerization reaction, not a crosslinking reaction. The '867 patent is simply teaching methods of forming polymers where a silsesquioxane is a monomer in that polymer. It does not teach or suggest putting these polymers in a composition that can be crosslinked (i.e., bonds formed between polymer chains - either directly or through a crosslinking agent) to form a layer that is substantially insoluble in photoresist solvents. It is submitted that this rejection has been overcome as well.

It is noted with appreciation that the Examiner has found claims 43, 49, 51, 55, 59, 64, 66, 69-70, 73-74, 77, 82, 84, and 87-88 to be allowable over the art.

It is believed that no further issues should exist with the present application, and that a Notice of Allowance is in order. However, if further issues remain, the Examiner is urged to contact the undersigned at 800-445-3460 to resolve these issues and expedite prosecution of this application. Any additional fee due in conjunction with this amendment should be applied against our Deposit Account No. 19-0522.

Respectfully submitted,

By 

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